

## CLAIMS

1) A process for separating mixtures of hydrocarbon isomers in gas phase on molecular sieves, characterized in that it comprises the following steps:

(a) feeding the mixtures of hydrocarbon isomers to a column, or several columns, having the function of primary adsorption column, wherein part of the isomers with a greater selectivity towards the molecular sieves, are adsorbed;

(b) feeding the effluent from the primary adsorption column(s) to a column, or several columns, having the function of secondary adsorption column, wherein the remaining part of the isomers with a greater selectivity towards the molecular sieves, are adsorbed, and from which a stream is discharged containing the isomers with a lower selectivity towards the molecular sieves, and the desorbing agent already present in the column;

(c) feeding the desorbing agent to a column(s) having the function of desorption column, from which a stream is discharged containing the isomers with a greater selectivity towards the molecular sieves, and the desorbing agent itself;

(d) feeding the stream containing the isomers with a

lower selectivity towards the molecular sieves and the desorbing agent, leaving the column(s) having the function of secondary adsorption column, to a distillation unit for the recovery of the desorbing agent to be recycled to the column(s) having a desorption function;

- (e) feeding the stream containing the isomers with a greater selectivity towards the molecular sieves, and the desorbing agent, leaving the column(s) having the function of desorption column, to another distillation unit for the recovery of the desorbing agent to be recycled to the column(s) having a desorption function,

steps (a), (b) and (c) being effected by means of three phases and a number of three or a multiple of three columns having fixed molecular sieve beds, so that from one phase to another, these columns pass alternatively in sequence from secondary adsorption column functions, to primary adsorption column functions, to desorption column functions.

- 2) The process according to claim 1, wherein the adsorptions are carried out at a temperature ranging from 20 to 180°C and at a pressure ranging from 1 to 10 bars.
- 3) The process according to claim 1, wherein the desorbing agent is an aliphatic hydrocarbon in vapor phase

or an aromatic hydrocarbon in vapor phase.

- 4) The process according to claim 1, wherein the hydrocarbon isomers have a number of carbon atoms less than or equal to 10.

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